Energy Trust of Oregon

Meter-Based Energy Modeling and Tracking Platform for Commercial Buildings

Request for Information

RFI Submission Deadline:

January 30th, 2019, 5:00 p.m. (PST)

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EnergyTrust of Oregon

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1. Introduction

Energy Trust of Oregon, Inc. (Energy Trust) is issuing this Request for Information (RFI) as a means of technical discovery and information gathering. Respondents will provide information about potential platform solution(s) to effectively support a portfolio of individual meter-based, whole building energy usage regression models for commercial buildings, referred to in this RFI as a "the platform". For the purpose of this RFI, "the platform" is a business application that uses server-based and/or cloud-based software and services to generate, update, and report on meter-based, whole building energy usage models for commercial buildings. Currently, Energy Trust uses an Excel-based Energy Trust of Oregon Performance Tracking Tool (referred to as the "PTT" in this RFI) to develop, optimize, and track meter-based, whole building energy usage regression models and calculate savings for Energy Trust's Commercial Strategic Energy Management (SEM) and Pay for Performance (PfP) program offerings. These regression-based energy usage models are based upon industry standards outlined in International Performance Measurement and Verification Protocol (IPMVP) Option C and American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)-14 2014 and are governed by Energy Trust's existing Commercial measurement and verification (M&V) guidelines for operations and maintenance (O&M) programs.

This RFI provides an overview of existing Energy Trust's meter-based, whole building programs; the objectives for an enhanced energy model platform solution; a response template for RFI respondents; and an overview of existing energy model workflow.

Based on the information provided by respondents to this RFI as a result of this technical discovery and information gathering process, Energy Trust will determine next steps and may subsequently issue a competitive solicitation for services, products and/or equipment.

1.1. Key RFI Dates

Key dates associated with this RFI are listed below.

Questions and requests for clarification due	December 28th, 2018, 5:00 p.m.
Question and Answer responses posted	January 4th, 2019, 5:00 p.m.
RFI response submission deadline	January 30th, 2019, 5:00 p.m.
Potential respondent demonstrations	Week of February 17th, 2019

All times listed are Pacific Standard Time (PST).

1.2. About Energy Trust

Energy Trust is an independent nonprofit organization selected and overseen by the Oregon Public Utility Commission (OPUC) to help Oregon utility customers save energy and generate renewable power. Energy Trust's services, cash incentives and energy solutions have helped participating customers of Portland General Electric, Pacific Power, NW Natural, Cascade Natural Gas and Avista save nearly $2.3 billion on their energy bills. The cumulative impact of the organization's leadership since 2002 has been a contributing factor in the region's low energy costs and in building a sustainable energy future.

Energy Trust operates under a Five-Year 2015-2019 Strategic Plan that sets aggressive savings and generation goals. The plan includes strategies for continuously improving program designs and services, managing the total cost of delivering energy efficiency, expanding customer participation, and replenishing the energy-efficiency resource through a portfolio of new technologies and product development strategies.

1.3. About Energy Trust's Commercial Whole Building and O&M Programs

Energy Trust deploys programs that drive energy efficiency, resulting in reliable energy savings. To estimate energy savings, these programs utilize approaches that vary based on the type of energy efficiency measure, ranging from very simplified measure level calculations, to system-focused calculations, up to facility-wide meter-based regression models. Two Energy Trust Commercial offerings under the Energy Trust Existing Buildings Program, SEM and PfP, address multiple energy efficiency measures and behaviors across entire buildings or facilities using facility-wide energy savings estimates for both electricity and gas consumption.

Currently, the Excel-based Energy Trust PTT is used by modelers to develop, optimize, and track meter-based, whole building energy usage regression models for Commercial SEM and Commercial PfP offerings under the Energy Trust Existing Buildings Program. At the time of this document, there are approximately 700 meter-based, whole-building models at 500 sites for Commercial SEM participants alone. Energy Trust is considering how to expand these offerings to customers with lower savings potential (i.e., smaller energy users and long-term program participations) and seeks information on tools and platforms that can reduce the costs of ongoing development of whole-building energy models, automating energy savings calculations, updating model variables and CUSUM charts, and reporting on the portfolio of whole-building energy models.

2. Vendor Platform Objectives

Energy Trust believes that a streamlined platform to develop, track, and evaluate whole building energy models is desirable to support the continued success and expansion of Energy Trust's commercial O&M offers. Respondents will be able to indicate whether their solution(s) meet some or all of the objectives and requirements outlined in this RFI.

The core objectives for developing and/or deploying a server-based and/or cloud-based platform are as follows:

1. **Increase the speed, efficiency and accuracy of developing and maintaining meter-based, whole building energy usage models for commercial buildings.**
    a. *Streamline model creation process.*
    b. *Automate savings calculations.*
2. **Centralized access to models.**
    a. *Streamline model and evaluation review.*
    b. *Access by multiple (and potentially simultaneous) users.*

3. **Increase the ability to track and report on metadata from models.**
    a. *Ability to track at facility- or site-level, customer-level or multi-site, cohort-level, and program-level.*
    b. *Explore additional M&V capabilities to track building and customer activity with centralized tracking and metadata.*
4. **Achieve streamlined integration with existing Energy Trust systems.**
5. **Improve customer experience.**
    a. *Improve model accessibility and tracking program activity for program participants.*
    b. *Improve ability to display engagement results and progress against customer baselines (individual sites and customer-level/multi-site).*
    c. *Potential integration with customer's existing Energy Management Information System (EMIS).*

While Energy Trust currently uses only monthly billed utility consumption data for electric and gas models, respondent may propose platform solutions that can accommodate meter data at more granular interval (e.g., weekly or daily). In addition, respondents may propose alternative methodologies for whole building energy models approaches based on documented industry standards.

3. Submission Guidelines

Responses to this RFI must be organized according to the following guidelines and submitted by the deadline indicated in Section 1 (Key Dates). A maximum length of twenty pages within the provided response template (Appendix B) will be accepted (see Section 3.2 below).

Respondents must submit all responses electronically via e-mail to Alex Novie, Sr. Project Manager at alex.novie@energytrust.org. The electronic copy can be submitted as a PDF or secure Word file. Please clearly indicate "RFI Response" in the subject line of the email submission.

Questions or requests for clarification about this RFI must be submitted in writing. Verbal requests cannot be accommodated. Submit RFI questions and clarification requests via email to Alex Novie, at alex.novie@energytrust.org by the due date indicated in Section 1 (Key Dates). Please clearly indicate "RFI Question/Request for Clarification" in the subject line of the email submission.

Energy Trust will post all written questions and answers to the RFI website page by the due date indicated in Section 1 (Key Dates).

Respondents may inquire about the status of their response (i.e. verify Energy Trust receipt) via email (alex.novie@energytrust.org). Please clearly indicate "Request to Verify RFI Submission Receipt" in the subject line of the email submission.

All respondents will receive notification when a solution direction has been determined.

3.1. Format – Signature Page, Cover Letter and Response Template

In order for Energy Trust to consider responses, respondents must submit the Signature page attached to this RFI as Appendix A as the cover page to its response. The Signature page must be signed by a duly authorized officer or agent of the respondent company submitting the response. The respondent may also include a one-page cover letter introducing their response, company and product. The cover letter and signature page do not count against the twenty page RFI response limit.

All responses to requirements shall use the response template provided in Appendix B. Responses not following the prescribed format will be disregarded. Responses to the individual questions, directions and requirements are not limited in length. Only the overall RFI response submittal is limited in length to twenty pages.

It is permissible to provide additional marketing information about the product along with your response; however, it must not be integrated within the template response content. Marketing information is not counted against the overall response page limit of twenty pages; however, it may be disregarded and not used in any further determination of an acceptable solution.

3.2. Overview of Response Categories in Appendix B

Company and Product Profile

Energy Trust is seeking information about the company developing and supporting the proposed product as well as the product itself. The responding company must be financially stable and in good standing with its clients, and it must possess the roadmap, foundation and capability to support its products and clients long-term.

Requirements – Functional and Non-Functional

The requirements listed in Appendix B address specific functional and non-functional needs for a platform. Please use the following to indicate in the “Meets” column the level at which the product meets the requirement:

- If the product fully meets the requirement respond with a “Y” value.
- If the product partially meets the requirement, respond with a “P” value. “Partially meets” means the product meets a subset of the full requirement or requires customization in order to meet the full requirement.
- If the product will meet the requirement in a future release respond with an “F” value.
- If the product does not meet the requirement respond with an “N” value.

Where the product fully meets or partially meets a requirement it is required that you provide comments detailing how that requirement is met. Where the product will meet a requirement in a future release it is required that the comment also indicate when the feature will be available.

References

Energy Trust is seeking information regarding clients/installation sites using this same product. Please provide two references for this product that are in the same/similar market segment as Energy Trust. A narrative section is provided if you wish to provide additional information on the client or installation, however it is not required.

3.3. Demonstrations

Energy Trust may request that one or more respondents present and demonstrate how their platform product(s) would meet Energy Trust's platform needs. Energy Trust will not provide compensation for any costs related to presentations or demonstrations made in response to this RFI. Energy Trust will schedule any presentations at mutually convenient times for Energy Trust and the respondents(s) within the defined period. Respondents should prepare for detailed questions about components of their platform.

4. RFI Governing Provisions

All responses to this RFI are subject to the following provisions:

No Commitment/Resulting Contract

This RFI is issued as a means of technical discovery and information gathering. This RFI is for planning purposes only and should not be construed as a solicitation nor should it be construed as an obligation on the part of Energy Trust to make any purchases. This RFI should not be construed as a means to pre-qualify vendors. Energy Trust may utilize the results of this RFI in drafting a competitive solicitation for services, products and/or equipment. Any future contract that may be awarded must comply with Energy Trust procurement requirements.

This RFI does not constitute an offer by Energy Trust, nor does it commit Energy Trust to enter into a contract or similar undertaking with any of the respondents or any organization associated with any of the respondents. Energy Trust also reserves the right to suspend or modify the RFI process or to issue a new RFI for the services described that would supersede and replace this one. No binding obligation shall be created unless Energy Trust and the concerned party execute a written agreement duly authorized and signed by both parties.

Confidentiality

Except in the case of litigation or other legal disclosure and/or audit requirements, Energy Trust will not disclose information submitted in response to an RFI to any third-party.

Ownership of Responses

All materials submitted in response to this RFI shall become the property of Energy Trust and will not be returned to the respondent.

No Verbal Addendums

Any clarification or interpretation of the RFI documents shall be issued in writing by Energy Trust. No verbal agreement or conversation made or had at any time with any officer, agent or employee of Energy Trust, nor any oral representation by such party shall bind Energy Trust nor

add to, detract from, affect or modify the terms of this RFI. Any addendum to this RFI will be in written form.

Respondent Costs

Each response prepared in response to this RFI will be prepared at the sole cost and expense of the respondent and with express understanding that there will be no claims whatsoever for reimbursement from Energy Trust.

Waiver of Claims

Respondents waives any right they might otherwise have to bring any claim, whether in damages or equity, against Energy Trust, Energy Trust Board of Directors or any of Energy Trust's agents, employees or contractors, with respect to any matter arising out of any process associated with this RFI.

Energy Trust Rights Reserved

Energy Trust reserves the right, in its sole discretion, to reject any or all submissions in whole or in part, to waive any minor irregularities or informalities in a response, and to enter into any agreement deemed to be in its best interests. In addition to any other enumerated reserved rights and/or options as stated in this RFI, Energy Trust may in its sole discretion do any one or more of the following:

- Disqualify responses that do not meet the requirements;
- Issue additional subsequent solicitations for information or proposals, including withdrawing this RFI at any time and/or issuing a new RFI that would supersede and replace this one, or issuing a follow up solicitation;
- Vary any timetable or schedule, add or change any provisions discussed herein;
- Conduct any briefing session or further information gathering or solicitation process on any terms and conditions;
- Suspend or modify the RFI process at any time.

Conflict of Interest

Respondents shall disclose in their submitted response all direct or indirect actual or potential conflicts of interest it or any of its personnel may have with Energy Trust. A "direct or indirect conflict" is defined as any situation in which an individual has or may be reasonably construed to have a direct or indirect personal or financial interest in any business affairs of Energy Trust, whether because of a proposed contract or transaction to which Energy Trust may be a party or may be interested or is under consideration, or whether such conflict is purely conceptual, because of similarity of business interests or affairs.

Additional Information

Energy Trust may request additional information.

Appendix A: RFI Response Cover Sheet and Signature Page

I, the undersigned declare that;

1. I am an authorized agent of the respondent listed below after “Respondent Firm Name” (“Respondent”) and have authority to submit this submission on behalf of the Respondent.
2. The information provided in this response is true and correct to the best of my knowledge.
3. I have read this Request for Information in its entirety and agree unconditionally to all of its conditions and governing provisions.
4. The Respondent has not directly or indirectly induced or solicited any other respondent to submit a false or sham submission.
5. The Respondent has not solicited or induced any other person, firm or corporation to refrain from proposing to this RFI.
6. The Respondent has not sought by collusion to obtain for itself any advantage over any other respondent or Energy Trust.
7. The Respondent’s response is genuine; not made in the interest of, or on behalf of, any undisclosed person, firm or corporation; and is not submitted in conformity with an agreement of rules of any group, association, organization or corporation.
8. I authorize the representatives of Energy Trust to investigate the business history of the Respondent, its affiliates, and all associated partners, principals and management and authorize the release of all said information.
9. I agree that I will report immediately in writing to Energy Trust any changes to the information contained herein at any time while respondent’s response is under consideration.

The information contained in this response and any part thereof, including its exhibits, schedules and other documents and instruments delivered or to be delivered to Energy Trust, is true, accurate and complete. This response includes all information necessary to ensure that the statements therein do not in whole or in part mislead Energy Trust as to any material fact.

Date: _____

Respondent Firm Name: _____

Authorized Signature: _____

Printed Name: _____

Title: _____

Appendix B: Response Template

1. **Signed RFI Response Cover Sheet and Signature Page (see Appendix A)**

2. **Company and Product Profile**

#	Question/Direction	Answer/Comment
COMP1	Provide a brief description of your company, mission and vision, including qualifications and credentials that are relevant to the energy and energy efficiency industries. (Please specify if partnering with another vendor)	
COMP2	When was your company founded?	
COMP3	When did you acquire or build commercial whole building energy modeling/tracking tools/platforms? (Please specify if partnering with another vendor)	
COMP4	Describe any specific experience with whole-building engineering, analysis, or review. (Please specify if partnering with another vendor)	
COMP5	How many employees do you have?	
COMP6	How many employees are dedicated to building commercial whole building energy tracking tools/platforms (i.e., software/tool development)? Please specify if partnering with another vendor.	
COMP7	How many employees are dedicated to energy management program design, implementation, analysis, or field work? (Please specify if partnering with another vendor)	
COMP8	Have there been, or are there, any ongoing, pending, or potential lawsuits, mediations, appeals processes, or arbitration related to your product line?	

3. Functional Requirements

#	Question/Direction	Answer/Comment	Meets (Y/P/F/N)
PROD1	What is the name of the product(s) being proposed?		
PROD2	Describe the methodology for developing meter-based, whole building energy usage models and determining energy savings.		
PROD3	How long have the product(s) been used commercially?		
PROD4	Describe the available deployment options for your solution (i.e. Cloud/SaaS, On Premises)		
PROD5	Does your solution require the installation/use of additional software and/or hardware components for full deployment? If yes, please describe.		
PROD6	Describe the product(s) roadmap(s), including update cycles and major forecasted changes.		
PROD7	Describe the product(s) support model(s). If various tiers of support are offered, describe them in detail.		
PROD8	Describe the licensing model(s) and associated costs, in addition to any costs related to other components of the product including but not limited to: onetime costs, per-transaction costs, product maintenance, upgrades and professional services (integration, development, etc.)		

4. Non-Functional Requirements

#	Question/Direction	Answer/Comment	Meets (Y/P/F/N)
Security			
SEC1	How do you ensure sensitive customer data is encrypted at rest and in motion?		
SEC2	If SaaS solution, describe your approach to data center security including network attacks like Distributed Denial of Service (DDoS) attacks?		
SEC3	Have your systems been reviewed by an independent information security and/or privacy audit in the last 12 months?		
SEC4	How do you ensure adequate monitoring of information security in your environment?		
Availability and Reliability			
AVA1	Does your solution have scheduled maintenance windows? If so, how many times per year, how long are they, and what timeframes were the maintenance windows scheduled last year?		
AVA2	What is your average system availability for each of the last three years up to today?		
AVA3	Is your solution reliant on third-party hosting providers for transmission and storage of data and/or documents?		
Integration			
INT1	Do you have open published APIs that are easily accessible to developers looking to integrate?		
INT2	Describe the technical approach for your APIs?		
INT3	Describe the tools available to support APIs (e.g., documentation, sample code walkthroughs, etc.).		
INT4	Does your solution have certificate-based API security access for integrated applications?		

#	Question/Direction	Answer/Comment	Meets (Y/P/F/N)
Identity Verification			
ID1	Please list all methods of user account authentication (e.g. multi-factor, etc.).		
ID2	Please describe your single-sign on (SSO) capabilities.		
Audit History			
AUD1	Do you track user changes to the models and at what level?		

5. References

Company/Agency #1	Industry	Size of agency and number of product users	How long have they been using the product?	Contact Information
Comments:				

Company/Agency #2	Industry	Size of agency and number of product users	How long have they been using the product?	Contact Information
Comments:				

In addition to these response guidelines, respondents must provide pricing estimates for:

- Any initial development or customization of platform for use by Energy Trust.
- Any user acceptance testing (UAT) with Energy Trust for existing and/or customized functionality.
- Licensing fees.
- Maintenance fees, if different from licensing fees, for at least 3 years of ongoing maintenance.

Appendix C: Energy Trust PTT Background

Background

Energy Trust's exploration of whole building energy usage modeling tools and platforms began in early 2016 with the development of Energy Trust's Commercial O&M Measurement and Verification Guidelines[1] based upon IPMVP Option C and ASHRAE-14 industry standards. The Energy Trust PTT was built and deployed for Energy Trust's Commercial SEM and PfP offers to be consistent with Energy Trust's guidelines.

The PTT uses monthly utility billing data, daily weather data, and Energy Trust capital project data to build and update regression models. These models use weighted regression techniques to normalize uneven billing intervals (i.e., number of days in billing period) in order to correct for net error in the model[2] and ensure consistency in the predicted consumption values. These models produce running totals or CUSUM[3] estimates to estimate the post-baseline change in energy usage and claim savings attributed to SEM and PfP programs, net of any saving claimed separately by Energy Trust for other types of efficiency measures during the program engagement period. When developing and maintaining whole building energy models using the PTT, energy modelers use a combination of Energy Trust and participating customer data. Specific data points include, but are not always limited to, the following categories:

- **Billing/energy use data**: To develop baseline energy use, modelers use available billed utility consumption data from program participants customers, where available, and may use monthly billing data from Energy Trust's Utility Customer Information (UCI) database[4] for eligible gas and electric customers. When updating models, energy modelers or program participants will enter billed utility consumption data for the post-baseline or program engagement period. Typically, this monthly data comes from customer bills and not the Energy Trust UCI database. Monthly data are then disaggregated into daily values for incorporation into the weighted regression model.
- **Weather data**: Weather data is a requirement for all PTT models and the preferred form is degree-days (i.e., HDD and/or CDD). Daily weather values are obtained from NOAA weather stations via FTP or API channels. Energy Trust is developing a centralized database of daily NOAA weather data for stations across Oregon. Key variables include Weather Station ID, Min Temperature, Max Temperature, and Average Daily Temperature.

[1] A portion of these proprietary guidelines may be made available, upon written request, for the sole purpose of informing a respondent's RFI response.
[2] These techniques are described in further detail in ASHRAE Guideline 14-2002, Annex D: Regression Techniques, Eliminating Net Bias Error Due to Data Length Variation.
[3] CUSUM is the cumulative sum of the differences between actual values (billed utility energy consumption data) and predicted values (modeled energy consumption). The CUSUM is used to detect a change or deviation from the model over time.
[4] Energy Trust receives monthly electric meter data from Portland General Electric and Pacific Power, and monthly gas meter data from NW Natural, Cascade Natural Gas and Avista. More granular interval data is not widely available at this time.

- **Occupancy data**: Energy modelers will work with customers to obtain occupancy data that can be used in the PTT models to account for variation in the model. Occupancy data can be in the form of a daily schedule or operating hours, and typically is stored/updated in PTT as a daily value.
- **Opportunity Register of operations, maintenance, and behavior (OMB) activities**: Program staff and participants develop an opportunity register of actions that can save energy at the site. These activities are logged in whole-building models for the purposes of tracking changes in energy performance due to customer activity at a specific site. For SEM, these are not capital projects.
- **Other energy project savings data**: Any energy savings claimed separately by Energy Trust for other types of efficiency measures (i.e., through other Energy Trust program offers) during the program engagement must be deducted from model savings. Modelers obtain data on Energy Trust capital projects from Energy Trust's project tracking database. Key information includes project install date, working savings (estimated or deemed kWh or Therms), and measure life.

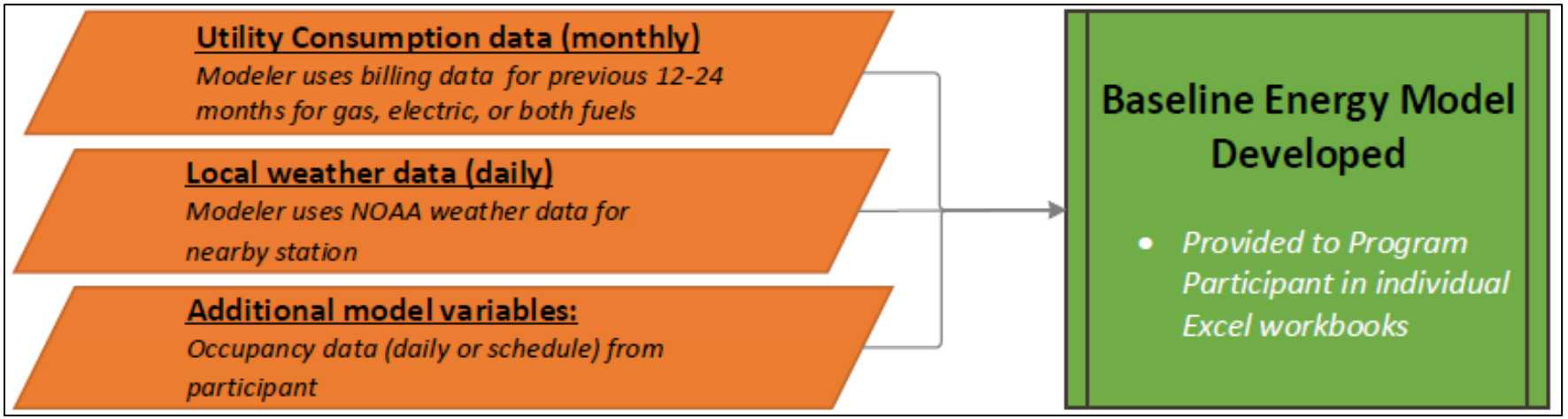
Existing Model Process Example

An overview of the existing, Excel-based PTT workflow is provided below.

Generating Whole Building Energy Model (Baseline Model)

When a new customer site is enrolled, the modeler will develop a whole-building baseline energy model in the PTT. The model uses primary variables (energy consumption, weather, and occupancy or other variables) gathered by modelers and is presented to customers in an individual Excel workbook. Participants with multiple sites may have several PTT workbooks to manage.

Figure 1: Baseline Model Generation Inputs for Existing PTT



Performance Tracking and Monthly Model Updates

Once a whole-building model is developed, modelers and/or participants will update data for model variables throughout the engagement year in order to track program performance results displayed in CUSUM calculations and charts.

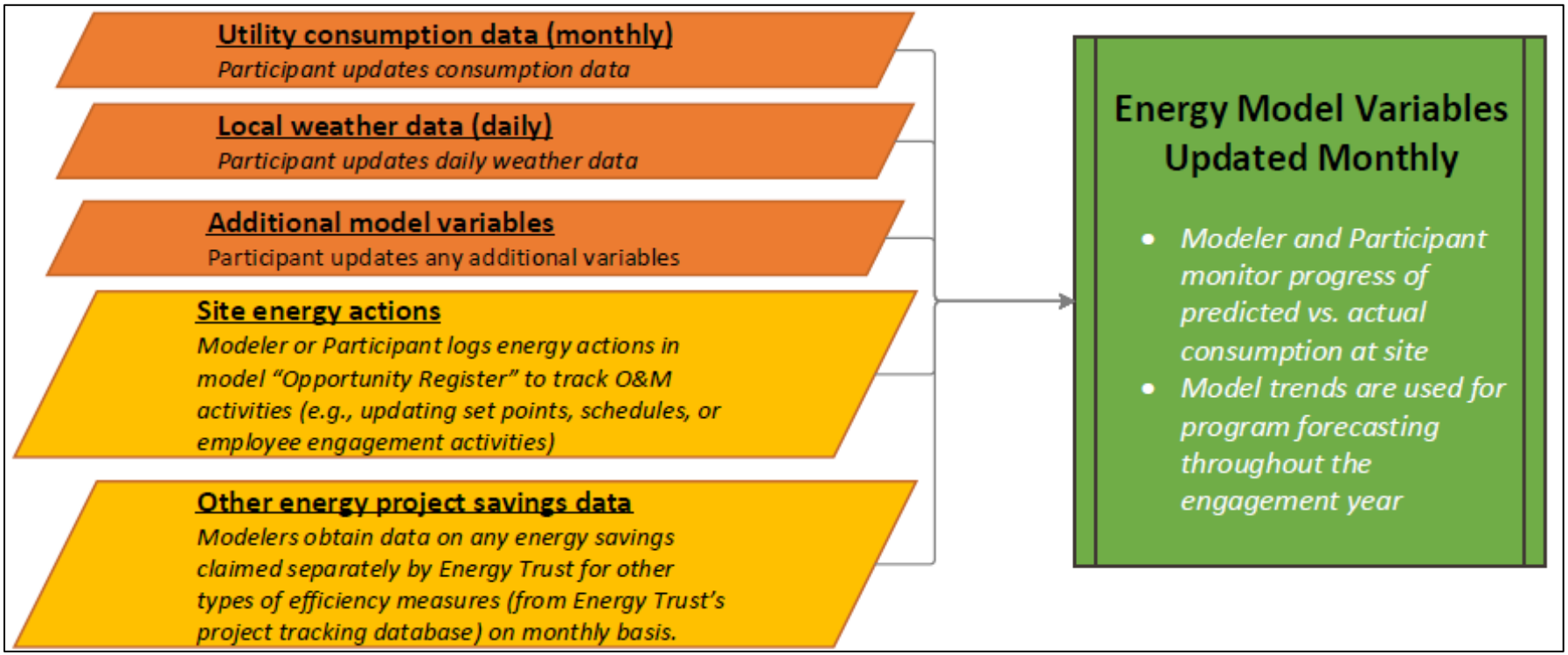
The following model variables are updated at least monthly:

a) Energy consumption data (via program participant bills or modeler accessing Energy Trust UCI);
b) Weather data (via modeler or webservice with customer instructions);
c) Additional model variables, such as occupancy data.

In addition to updating model variables, the modeler must ensure that additional information on site activity is logged in the model:

d) O&M-related activities: operations, maintenance, and behavior activities are tracked on an "Opportunity Register" in the model, allowing participants and modelers to see energy performance results of their program engagement throughout the year.
e) Capital project activity: Whole-building energy models must accurately account for any saving claimed separately by Energy Trust for other types of efficiency measures during the program engagement period.

Figure 2: Performance Tracking & Monthly Model Updates for Existing PTT for SEM Engagement



Annual Program Savings Claims & Performance Tracking

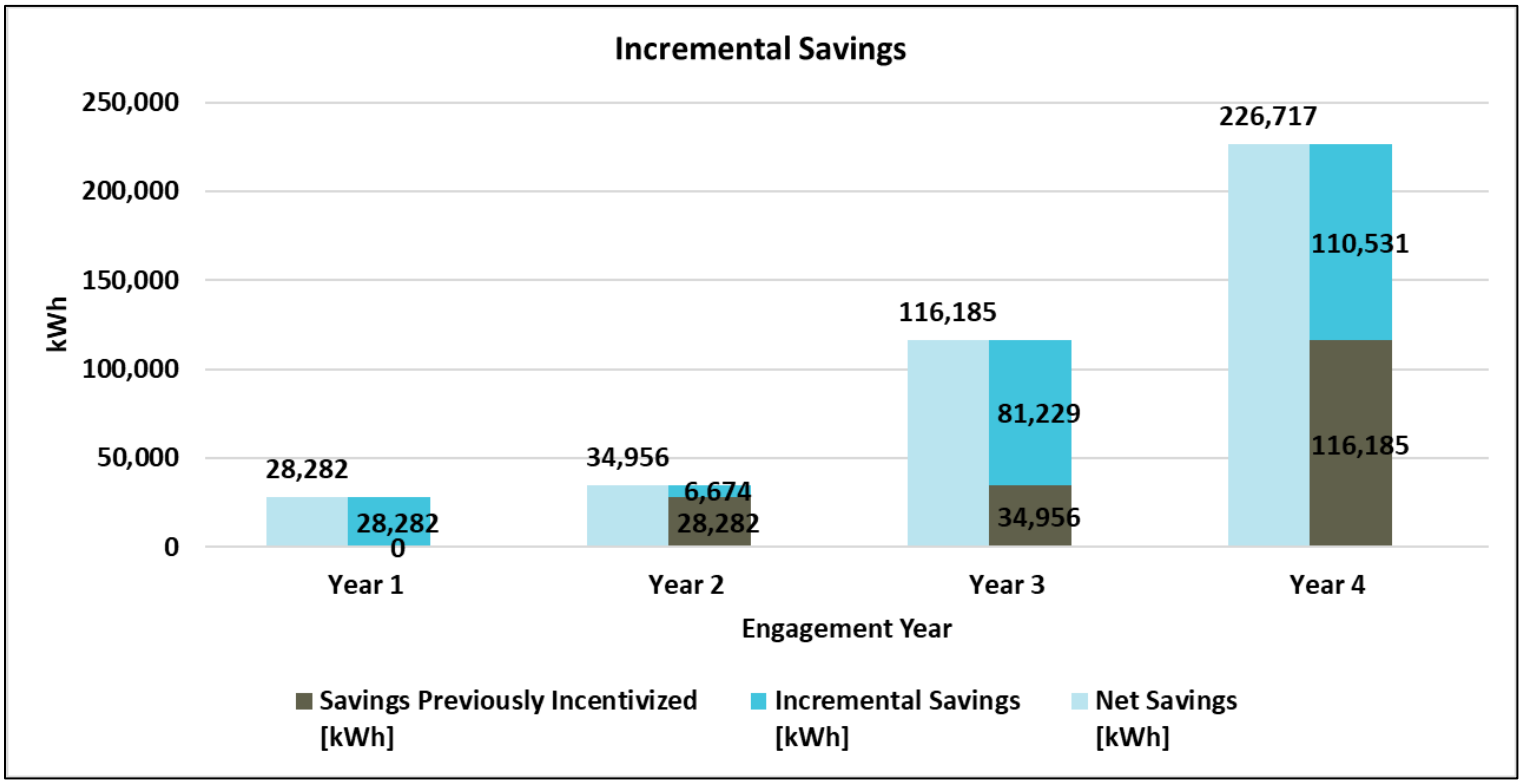
Once a participant's program engagement year ends, the modeler will update the whole-building model as part of annual program reporting. The model will show the total difference between the predicted savings established in the model baseline and the meter-based performance of the building, minus any energy project savings attributed to other Energy Trust programs. Energy Trust will perform quality control review of a percentage of models based upon established statistical criteria. A sample of the Annual Savings Summary from the current PTT is as follows:

Figure 3: Sample Annual Savings Summary Table from Existing PTT for SEM Engagement

Electricity Savings Summary												
Engagement Year	Start Date	End Date	Months Reported	Predicted [kWh]	Metered [kWh]	Model-Measured Savings [kWh]	Other Energy Projects [kWh]	Net Savings [kWh]	Model-Measured Savings %	Savings Goal %	Incremental Savings [kWh]	Avoided Cost ($)
Baseline	2/19/2012	2/18/2014	24	3,713,887	3,713,887							
Year 1	2/19/2014	2/17/2015	12	1,798,603	1,770,321	28,282	0	28,282	1.5%	1.0%	28,282	$3,111.07
Year 2	2/18/2015	1/21/2016	11	1,664,884	1,629,928	34,956	0	34,956	1.9%	2.0%	6,674	$3,845.18
Year 3	1/22/2016	2/17/2017	13	1,974,648	1,848,436	126,212	-10,027	116,185	6.8%	3.0%	81,229	$12,780.35
Year 4	2/18/2017	4/17/2018	14	2,136,129	1,897,796	238,333	-11,616	226,717	12.8%	4.0%	110,531	$24,938.82
Year 5												
Total	2/19/2014	4/17/2018	50	7,574,265	7,146,481	427,784	-21,644	406,140			226,717	$44,675.41
Annual Average			13	1,893,566	1,786,620	106,946	-5,411	101,535			56,679	$11,168.85

In addition to the tables summarizing annual engagements, participants can see their program achievements over time. Participants have indicated that this information is very useful when engaging stakeholders within their organization. A participant's site can have a model that lasts from 3-5 years, and many sites have been involved in the program for at least 5 years. Below is a sample of the annual performance charts in the existing Energy Trust PTT:

Figure 4: Sample Annual Savings Summary Charts from Existing PTT for SEM Engagement



Current Challenges

Energy Trust has successfully developed a robust modeling tool and savings calculation methodology with the developed current Excel-based PTT. However, use of the PTT with approximately 700 models has also revealed some challenges and causes inefficiencies in program management, reporting and evaluation. Integration with Energy Trust systems is currently limited, requiring manual data entry by modelers and/or program participants. Large file size is also a barrier for modelers and participants. Furthermore, some participants are unable to use the current PTT because of settings that prohibit the execution of Excel VBA macros on devices within their organization's network. It is time-consuming to extract data from the current Excel-based PTT for evaluation or other analysis purposes and maintaining version control has been a challenge. These inefficiencies impact the scalability of commercial O&M programs and the overall customer experience with the current tool and program.